L23 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2001 ACS
AN 1997:456820 HCAPLUS
DN 127:69375
TI Small beam structure for vibration or displacement sensors and manufacture thereof
IN Toda, Akitoshi; Matsuyama, Katsuhiro; Hata, Seiichi
PA Olympus Optical Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G01D021-00
ICS C22C045-00; G01B021-30; G01L001-18; G01N037-00; G01P015-12; H01L021-3065
CC 56-3 (Nonferrous Metals and Alloys)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09126833	A2	19970516	JP 1995-283624	19951031 <--

AB The title structure has a support member and an elastic beam-like member supported by the support member. At least the beam-like elastic member is made of an amorphous alloy. The structure is manufd. by controlled heating followed by photolithog.
ST vibration displacement sensor beam structure
IT Heating
Photolithography
(in manuf. of small beam structure for vibration or displacement sensors)
IT Metallic glasses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in small beam structure for vibration or displacement sensors)
IT Sensors
Vibration
(small beam structure for vibration or displacement sensors and manuf. thereof)
IT 124934-49-2, Aluminum 25, lanthanum 55, nickel 20 (atomic) 137458-95-8, Aluminum 7.5, copper 27.5, zirconium 65 (atomic)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(in manuf. of small beam structure for vibration or displacement sensors)

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L23  ANSWER 3 OF 3  WPIX   COPYRIGHT 2001   DERWENT INFORMATION LTD
AN   1997-323546 [30]    WPIX
DNN  N1997-267690        DNC C1997-104513
TI   Beam structure member made of amorphous alloy - is composed of retaining
     and beam type elastic parts.
DC   M26 M27 S02 U12
PA   (OLYU) OLYMPUS OPTICAL CO LTD
CYC  1
PI   JP 09126833   A  19970516 (199730)*     10p    G01D021-00      <--
ADT  JP 09126833 A JP 1995-283624 19951031
PRAI JP 1995-283624   19951031
IC   ICM  G01D021-00
     ICS  C22C045-00; G01B021-30; G01L001-18; G01N037-00; G01P015-12;
          H01L021-3065
AB   JP  09126833 A UPAB: 19970723
     The beam structure is composed of a retaining part and a beam type elastic
     part. The elastic part is made of at least amorphous alloy.
          USE - Used for microsensor and micromachining.
          ADVANTAGE - The conductive beam structure member has high hardness
     and high toughness.
     Dwg.1/7
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     FILE 'HCAPLUS' ENTERED AT 15:26:37 ON 26 JUN 2001
L1       158849 SEA ABB=ON  PLU=ON  (MATTER/CT OR "CONDENSED MATTER"/CT OR
                SOLIDS/CT OR "AMORPHOUS MATERIALS"/CT OR CERAMICS/CT OR
                "VITREOUS MATERIALS"/CT OR GLASS/CT OR "GLASS, NONOXIDE"/CT OR
                "GLASS, OXIDE"/CT OR "GLASSY STATE"/CT OR "VITREOUS STATE"/CT
                OR 2M5090Z/CT OR 4901H/CT OR "AP 5710"/CT OR "AMORPHOUS
                SUBSTANCES (L) GLASS"/CT OR "B 38/4000"/CT OR "BAH 71"/CT OR
                "BAL 41"/CT OR "BG 18"/CT OR BAFL/CT OR "CEF 048"/CT OR "CS
                2-60"/CT OR "CS 2-62"/CT OR "CERAMIC MATERIALS AND WARES (L)
                GLASSES"/CT OR "DU PONT 56810"/CT OR "EBG 210"/CT OR "ESL-D
                95233A"/CT OR "FMW 5W001"/CT OR "FRACTOSIL 25000"/CT OR "G
                3-0428"/CT OR "G 3-0496"/CT OR "GA 1"/CT OR "GA 1 (GLASS)"/CT
                OR "GA 13"/CT OR "GA 13 (GLASS)"/CT OR "GA 44"/CT OR "GA 44

L2       211413 SEA ABB=ON  PLU=ON  ("ALUMINOBOROSILICATE GLASSES"/CT OR
                "BARIUM ALUMINOBOROSILICATE GLASSES"/CT OR "BK7 GLASS"/CT OR
                "BOROPHOSPHOSILICATE GLASSES"/CT OR "GLASS, OXIDE (L) ALUMINOBO
                ROSILICATE"/CT OR "GLASS, OXIDE (L) BOROPHOSPHOSILICATE"/CT OR
                "SODIUM BOROSILICATE GLASSES"/CT OR "GLASS, OXIDE (L) BOROSILIC
                ATE"/CT OR "CHALCOGENIDE GLASSES"/CT OR "GLASS, NONOXIDE (L)
                SELENIDE"/CT OR "GLASS, NONOXIDE (L) SULFIDE"/CT OR "GLASS,
                NONOXIDE (L) TELLURIDE"/CT OR "SELENIDE GLASSES"/CT OR

L3       440581 SEA ABB=ON  PLU=ON  (L1 OR L2) OR GLASS##/ST,TI OR AMORPHOUS/TI
                ,ST,ST

L5          907 SEA ABB=ON  PLU=ON  L3

L6         9812 SEA ABB=ON  PLU=ON  MICROMACHIN### OR MEMS OR MICROMECHANICAL##
                 OR MICROELECTROMECH? OR MICRO(W)(ELECTROMECH? OR MECHANIC###)
L7            2 SEA ABB=ON  PLU=ON  L5 AND L6

L8         1527 SEA ABB=ON  PLU=ON  (DEFORM######### OR BEND#### OR TRANSFORM##
                #### OR SOFTEN####)(W)POINT#(6A)(GLASS# OR AMORPHOUS)
L9         1081 SEA ABB=ON  PLU=ON  L3 AND L8
L10           0 SEA ABB=ON  PLU=ON  L9 AND L6
L11           0 SEA ABB=ON  PLU=ON  L8 AND L6
L12          26 SEA ABB=ON  PLU=ON  L8 AND THIN FILM
L13          16 SEA ABB=ON  PLU=ON  L12 AND DEGREE
                D ALL TOT
L14          10 SEA ABB=ON  PLU=ON  L12 NOT L13
                D ALL TOT
L15         921 SEA ABB=ON  PLU=ON  L3 AND L6
L16       13864 SEA ABB=ON  PLU=ON  (DEFORM######### OR BEND#### OR TRANSFORM##
                #### OR SOFTEN####)(6A)(GLASS# OR AMORPHOUS)
L17          39 SEA ABB=ON  PLU=ON  L6 AND L16
L18           6 SEA ABB=ON  PLU=ON  L17 AND (DEG OR DEGREE)

     FILE 'INSPEC' ENTERED AT 15:45:37 ON 26 JUN 2001
L19       16236 SEA ABB=ON  PLU=ON  MICROMACHIN### OR MEMS OR MICROMECHANICAL##
                 OR MICROELECTROMECH? OR MICRO(W)(ELECTROMECH? OR MECHANIC###)

L20       25541 SEA ABB=ON  PLU=ON  (GLASS/CT
                FIBER REINFORCED COMPOSITES"/CT OR "GLASS FIBER REINFORCED
                PLASTICS"/CT OR "GLASS FIBERS"/CT OR "GLASS FIBRE REINFORCED
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                COMPOSITES"/CT OR "GLASS FIBRE REINFORCED PLASTICS"/CT OR
                "GLASS FIBRES"/CT OR "GLASS FORMATION"/CT OR "GLASS INDUSTRY"/C
                T)
                E E3+ALL
L21      237462 SEA ABB=ON  PLU=ON  L20 OR (MATERIALS/CT OR GLASS/CT OR
                GLASSES/CT OR "SILICATE GLASSES"/CT OR "ALUMINOSILICATE
                GLASSES"/CT OR "BORATE GLASSES"/CT OR "BOROSILICATE GLASSES"/CT
                 OR "CHALCOGENIDE GLASSES"/CT OR "GERMANATE GLASSES"/CT OR
                "GLASS CERAMICS"/CT OR "HALIDE GLASSES"/CT OR "FLUORIDE
                GLASSES"/CT OR "METALLIC GLASSES"/CT OR "OPTICAL GLASS"/CT OR
                "PHOSPHATE GLASSES"/CT OR "PHOSPHOSILICATE GLASSES"/CT OR
                CERAMICS/CT OR "DIELECTRIC MATERIALS"/CT OR "GLASS FIBRES"/CT

L22        4810 SEA ABB=ON  PLU=ON  (DEFORM######### OR BEND#### OR TRANSFORM##
                #### OR SOFTEN####)(6A)(GLASS# OR AMORPHOUS##)

     FILE 'HCAPLUS, INPADOC, WPIX' ENTERED AT 15:50:51 ON 26 JUN 2001
                E JP09126833/PN

     FILE 'INSPEC' ENTERED AT 15:59:42 ON 26 JUN 2001
                E MICROELECTROMECHANICAL DEVICES/CT
                E E4+ALL/CT
L24       11215 SEA ABB=ON  PLU=ON  MICROELECTROMECHANIC? OR MICROMECHANIC? OR
                MEMS
L25       17662 SEA ABB=ON  PLU=ON  MICRO MACHIN### OR MICROMACHIN### OR L24
                OR MICRO ELECTROMECHANIC? OR MICRO MECHANIC?
L26        4277 SEA ABB=ON  PLU=ON  (DEFORM######### OR BEND#### OR TRANSFORM##
                #### OR SOFTEN####)(4A)(GLASS## OR AMORPHOUS##)
L27          29 SEA ABB=ON  PLU=ON  L22 AND L24

L28       28685 SEA ABB=ON  PLU=ON  (535 K OR 536 K OR 537 K OR 538 K OR 539 K
                OR 540 K OR 545 K OR 550 K OR 555 K OR 560 K OR 565 K OR 570 K
                OR 575 K OR 580 K OR 581 K OR 582 K OR 583 K OR 584 K OR 585 K
                OR 586 K OR 587 K OR 588 K OR 589 K )/TEMP

     FILE 'INSPEC' ENTERED AT 16:12:08 ON 26 JUN 2001
L29           0 SEA ABB=ON  PLU=ON  L27 AND L28

L30          33 SEA ABB=ON  PLU=ON  L22 AND L25
L31           0 SEA ABB=ON  PLU=ON  L30 AND L28
L32           0 SEA ABB=ON  PLU=ON  L30 AND (500 K OR 510 K OR 520 K OR 530 K
                OR 590 K OR 600 K )/TEMP
                D L30 ALL TOT
     FILE 'WPIX, JAPIO, JICST-EPLUS, CEABA-VTB' ENTERED AT 16:19:03 ON 26 JUN
     2001
L33       10552 SEA ABB=ON  PLU=ON  (DEFORM######### OR BEND#### OR TRANSFORM##
                #### OR SOFTEN####)(4A)(GLASS## OR AMORPHOUS##)
L34        1659 SEA ABB=ON  PLU=ON  MICROELECTROMECHANIC? OR MICROMECHANIC? OR
                MEMS
L35        8189 SEA ABB=ON  PLU=ON  MICRO MACHIN### OR MICROMACHIN### OR L34
                OR MICRO ELECTROMECHANIC? OR MICRO MECHANIC?
L36           9 SEA ABB=ON  PLU=ON  L33 AND L35
                D ALL TOT
                D MAX 1
L37          65 SEA ABB=ON  PLU=ON  L33 AND POINT AND THIN FILM AND SUBSTRATE
L38          65 SEA ABB=ON  PLU=ON  L37 NOT L36
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L39           64 DUP REM L38 (1 DUPLICATE REMOVED)
L40           48 SEA ABB=ON  PLU=ON  L39 AND (TEMP OR TEMPERATURE OR DEG OR
                 DEGREE#)
                 D ALL TOT

     FILE 'STNGUIDE' ENTERED AT 16:28:57 ON 26 JUN 2001

     FILE 'DPCI' ENTERED AT 16:41:12 ON 26 JUN 2001
L41            0 SEA ABB=ON  PLU=ON  JP47042917/PN.D

     FILE 'DPCI' ENTERED AT 16:41:22 ON 26 JUN 2001
L42            0 SEA ABB=ON  PLU=ON  JP47042917/PN.D,PN,PN.G

     FILE 'DPCI' ENTERED AT 16:42:15 ON 26 JUN 2001
L43            0 SEA ABB=ON  PLU=ON  JP72042917/PN.D,PN,PN.G

     FILE 'DPCI' ENTERED AT 16:42:24 ON 26 JUN 2001
L44            0 SEA ABB=ON  PLU=ON  JP72042917B/PN.D,PN,PN.G

     FILE 'DPCI' ENTERED AT 16:42:32 ON 26 JUN 2001
L45            0 SEA ABB=ON  PLU=ON  JP7242917B/PN.D,PN,PN.G

     FILE 'DPCI' ENTERED AT 16:42:38 ON 26 JUN 2001
L46            1 SEA ABB=ON  PLU=ON  JP7242917/PN.D,PN,PN.G
                 D ALL

     FILE 'INSPEC, HCAPLUS, COMPENDEX, CERAB' ENTERED AT 16:43:50 ON 26 JUN
     2001
L*** DEL       1 S GLASS SOFTENING(W)(PT OR POIUNT)
L47          127 SEA ABB=ON  PLU=ON  GLASS SOFTENING(W)(PT OR POINT)
L48            0 SEA ABB=ON  PLU=ON  L47 AND (MEMS OR MICRO OR MICROMACHIN? OR
                 MICROELECTROMACHIN?)
L49            3 SEA ABB=ON  PLU=ON  L47 AND THIN FILM
                 D ALL TOT
L50       162656 SEA ABB=ON  PLU=ON  PHYSICAL PROPERTIES
L51          449 SEA ABB=ON  PLU=ON  SOFTENING(W)(PT OR POINT) AND L50
L52            1 SEA ABB=ON  PLU=ON  L51 AND (MEMS OR MICRO OR MICROMACHIN? OR
                 MICROELECTROMACHIN?)
                 D ALL
L53            7 SEA ABB=ON  PLU=ON  L51 AND THIN FILM
                 D ALL TOT
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L40 ANSWER 38 OF 48 JAPIO COPYRIGHT 2001 JPO
AN 1988-221610 JAPIO
TI MANUFACTURE OF **THIN FILM** SEMICONDUCTOR DEVICE
IN YOSHIMURA MASAO; AOYAMA TAKASHI; KAWACHI GENSHIROU; KONISHI NOBUTAKE
PA HITACHI LTD, JP (CO 000510)
PI JP 63221610 A 19880914 Showa
AI JP1987-54038 (JP62054038 Showa) 19870311
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: E, Sect. No. 703, Vol. 13, No. 16, P. 34 (19890113)
IC ICM (4) H01L021-20
ICS (4) H01L021-324
ICA (4) H01L029-78
AB PURPOSE: To facilitate formation of an excellent polycrystalline silicon **thin film** with large crystal grains by a method wherein a **thin film** layer whose melting **point** or softening **point** is below an annealing **temperature** is provided between a glass **substrate** and the polycrystalline silicon this film and then the annealing is carried out.
CONSTITUTION: An organic glass layer 3 is formed on a glass **substrate** 1 whose strain **point** is higher than 600. **degree**. and, after a polycrystalline silicon **thin film** 2 is formed on it, annealing is carried out at 600. **degree**.C. The organic glass layer 3 is made of material whose softening **point** is lower than 600.**degree**.C. As the material of the film between the glass **substrate** 1 and the polycrystalline **thin film** 2, tellurium dioxide, inorganic **glass** whose **softening point** is below an annealing **temperature** and so forth may be employed. The film 3 is in a fluid state or in a deformable state under the annealing **temperature** so that the **degree** of freedom of the silicon atoms of the polycrystalline silicon this film on the **substrate** side is not reduced and, like on the surface side, the sizes of crystal grains can be enlarged and the excellent polycrystalline **thin film** can be formed.

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L40  ANSWER 4 OF 48  WPIX  COPYRIGHT 2001  DERWENT INFORMATION LTD
AN   1995-108167 [15]   WPIX
DNN  N1995-085525
TI   Solar cell with cpd. semiconductor contg. heavy metals e.g. cadmium ,
     selenium , tellurium - uses low m.pt. glass on semiconductor
     layer surfaces to seal cell cpd. elements above thermal decomposition
     temp..
DC   U12 X15
IN   IKEDA, M; KOHARA, N; NEGAMI, T; NISHITANI, M; TERAUCHI, M; WADA, T
PA   (MATU) MATSUSHITA ELEC IND CO LTD; (MATU) MATSUSHITA DENKI SANGYO KK
CYC  5
PI   EP 638939     A2 19950215 (199515)* EN   11p    H01L031-0216
         R: DE FR GB
     JP 07086625   A  19950331 (199522)        7p    H01L031-04
     US 5500056    A  19960319 (199617)       10p    H01L031-04
     EP 638939     A3 19970820 (199745)              H01L031-0216
ADT  EP 638939 A2 EP 1994-111166 19940718; JP 07086625 A JP 1994-162543
     19940715; US 5500056 A US 1994-274722 19940718; EP 638939 A3 EP
     1994-111166 19940718
PRAI JP 1993-177882   19930719
REP  No-SR.Pub; 3.Jnl.Ref; JP 53138287; JP 59169955; US 3653970; US 4239553
IC   ICM  H01L031-0216; H01L031-04
     ICS  H01L031-0203; H01L031-072
AB   EP    638939 A UPAB: 19950425
     The solar cell includes laminated cpd. semiconductor layers, and has a low
     m.pt. glass layer formed on at least one surface, either
     partially or completely over the semiconductor layer top and-or bottom
     surface. Pref. the glass layer has a softening
     temp. lower than 500deg.C, with a 0.1-`.0`mm thickness.
          The glass layer may be either a PbO-B2O3-SiO2-Al2O3 or ZnO-B2O3-SiO2
     glass, formed by sputter deposition. A low m.pt. glass layer (2)
     may be formed on a glass substrate (1), with a similar cover
     layer (7). The cpd. semiconductor layers may be a CdS window layer (4) and
     a CuInSe2 light absorbing layer (5).
          USE/ADVANTAGE - Super-straight or tandem cell. Prevents toxic
     environmental pollution at high temp. e.g. in case of fire.
     Dwg.4/6
FS   EPI
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L40 ANSWER 44 OF 48 JAPIO COPYRIGHT 2001 JPO
AN 1982-055521 JAPIO
TI PRODUCTION OF **THIN FILM** MAGNETIC HEAD
IN KAWAKAMI HIROJI; KICHISE MITSUO
PA HITACHI LTD, JP (CO 000510)
PI JP 57055521 A 19820402 Showa
AI JP1980-130673 (JP55130673 Showa) 19800922
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: P, Sect. No. 128, Vol. 6, No. 1291, P. 159 (19820715)
IC ICM (3) G11B005-12
ICS (3) G11B005-42

AB PURPOSE: To prevent the damage due to a contact of a recording medium for a magnetic circuit wound by a conductor, by adhering a protective matter with an electrostatic process to a magnetic head made of a **thin film** magnetic material.

CONSTITUTION: A protective matter 1 is directly adhered with an electrostatic process to a **substrate** 5 containing a **thin film** magnetic head 4. First, the adhering surface of the matter 1 composed of silicon, titanium, aluminum, etc. is smoothed, and a groove 2 is cut on the smoothed surface. Then the glass 3 having a low melting **point** is accumulated on the bottom of the groove 2 to secure a depth of (d). On the other hand, a magnetic **thin film**, a conductor **thin film** and an insulator **thin film** are laminated on the **substrate** 5 with a height of 5-20.mu.m to form a magnetic head 4. The **substrate** 5 is stuck on the matter 1 so that the head 4 is put into the groove 2 of the matter 1, and preheating is carried out at 300-350.**degree**.C to **soften** the **glass** 3. Then the high voltage of a prescribed polarity is applied to both the matter 1 and the **substrate** 5, and accordingly, the electrostatic adhesion progresses. The glass 3 is pressed to the head 4 and deformed as shown in figure E. The **substrate** 5 uses silicate containing several % of lithium. As a result, the damage of the **substrate** 5 which is caused by the friction with a recording medium can be avoided.

L40 ANSWER 23 OF 48 JAPIO COPYRIGHT 2001 JPO
AN 1996-186195 JAPIO
TI PACKAGE FOR ELECTRONIC PART
IN HORIUCHI MICHIO; MIYAGAWA HIROSHI; HARAYAMA YOICHI
PA SHINKO ELECTRIC IND CO LTD, JP (CO 416101)
PI JP 08186195 A 19960716 Heisei
AI JP1994-328768 (JP06328768 Heisei) 19941228
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 96, No. 7
IC ICM (6) H01L023-12
ICS (6) H01L023-13; (6) H01L023-522

AB PURPOSE: To achieve a high-density wiring by using **glass** of which **softening point** is equal to or less than a specific **temperature** as a main constituent and forming and welding a glass layer where a conductor wiring penetrates in thickness direction on a ceramic **substrate** and then providing an external connection terminal on the surface.
CONSTITUTION: A glass layer 14a where a conductor wiring 12 penetrates in thickness direction and the softening **point** is equal to or less than 950.**degree**.C is welded to a ceramic **substrate** 10. Also, a metal ball 16 as an external connection terminal is sealed to a conductor wiring 12 which is exposed to the surface of the glass layer 14a. A plane wiring pattern 20 is formed on the surface of the **substrate** 10 and a part 20a is formed on an inner wiring pattern sandwiched by the **substrate** 10 and the glass layer 14a and then a part 20b is formed on a wiring pattern exposed in a cavity 18. Then, a semiconductor element 22 is mounted on the **substrate** 10 of the cavity 18 and the semiconductor element 22 and the exposed wiring pattern 20b are electrically connected to a wire 24, thus welding the glass layer 14a on the **substrate** 10 and forming a pattern according to a **thin film** in the interior and hence achieving a high-density wiring.

L13 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2001 ACS
AN 1980:86943 HCAPLUS
DN 92:86943
TI **Thin film** and glass sheet laminate
IN Kirkpatrick, Allen R.
PA Spire Corp., USA
SO U.S., 5 pp.
CODEN: USXXAM
DT Patent
LA English
IC B29C019-02; B32B031-00
NCL 156230000
CC 76-13 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4179324	A	19791218	US 1977-855418	19771128

AB A **thin film** (e.g. of a semiconductor) and glass sheet laminate is fabricated by depositing the film onto a temporary substrate (with a carbonaceous release layer) by a deposition process, superposing a glass sheet on the film, exposing the structure to a thermal environment which does not exceed the **softening point** of the **glass**, electrostatically bonding the **glass** and film, and removing the temporary substrate. The electrostatic bonding includes exposure to a thermal environment, i.e. from .apprx.300.**degree.** to the **softening point** of the **glass** sheet (e.g. 500-700.**degree.**), application of an elec. potential (100-10,000 V, with glass biased neg.) across the glass and film, and application of pressures of 100-1000 psi. The bond formation may involve ion-induced chem. bonding at the interface. The film can be processed, e.g. annealed, recrystd., diffused, on the temporary substrate, before bonding to the glass. After bonding and temporary substrate removal, the other film surface can be processed.
ST silicon glass laminate
IT Carbonaceous materials
RL: USES (Uses)
(as release layer in prodn. of laminates from silicon films and glass sheets using temporary substrate)

L13 ANSWER 1 OF 16 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:381696 HCAPLUS
TI Low-temperature epitaxial thickening of sub-micron poly-Si seeding layers on glass made by aluminium-induced crystallisation
AU Harder, N.-P.; Xia, J. A.; Oelting, S.; Nast, O.; Widenborg, P.; Aberle, A. G.
CS Photovoltaics Special Research Centre, University of New South Wales, Sydney, NSW 2052, Australia
SO Conf. Rec. IEEE Photovoltaic Spec. Conf. (2000), 28th, 351-354
CODEN: CRCNDP; ISSN: 0160-8371
PB Institute of Electrical and Electronics Engineers
DT Journal
LA English
CC 52 (Electrochemical, Radiational, and Thermal Energy Technology)
AB The formation of device-grade polycryst. silicon (poly-Si) films on std. glass at low temp. (i.e., below the **softening point** of the **glass**) using simple and fast processes is one of the major challenges for low-cost **thin-film** solar cells. In this paper, we report what is believed to be the first successful realization of thick (.apprx.5 .mu.m), large-grained (.apprx.5 .mu.m), continuous poly-Si films on glass at T < 650.**degree**.C. This technol. breakthrough has been achieved by using ion-assisted deposition at 630.**degree**.C for epitaxially thickening a thin (.apprx.0.4 .mu.m) seeding layer made on glass by aluminum-induced crystn.
RE.CNT 17

L13 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2001 ACS
AN 1993:675071 HCAPLUS
DN 119:275071
TI Investigation of polycrystalline silicon deposition on glass substrates
AU Shi, Zhengrong; Young, Trevor L.; Zheng, Guang Fu; Green, Martin A.
CS Cent. Photovoltaic Devices Syst., Univ. New South Wales, Kensington, 2033, Australia
SO Sol. Energy Mater. Sol. Cells (1993), 31(1), 51-60
CODEN: SEMCEQ; ISSN: 0927-0248
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75, 76
AB Borosilicate glass was chosen as substrate for soln. growth of Si at low temps. due to its potential role as the substrate for a solar module. Several approaches were used to deposit polycryst. Si layer from soln. onto glass substrates, namely, Si particle seeded growth, growth on .alpha.-Si coated glass substrates, and growth on bare glass from the solns. contg. Al and Mg. Large-grain polycryst. Si crystals were grown on glass substrates previously seeded by Si particles. Continuous Si **thin films** were deposited onto .alpha.-Si coated glass substrates. For the third approach, impinging growth of Si layers was obtained on sandblasted glass substrates from solns. contg. Al and Mg at <600.**degree**., if the concn. of Al and Mg in the soln. and the contact time between the soln. and the substrate are appropriately adjusted. Large-grain continuous Si **thin films** with an area of 10 cm2 were also grown on **glass** substrates at temps. close to the **softening points** of the **glass**. The obtained **thin-film** structures have very good chem. and mech. stability. These characteristics are consistent with the requirements for high-performance Si solar cells.
ST silicon polycryst deposition borosilicate glass substrate; solar cell silicon deposition glass substrate
IT Photoelectric devices, solar
(silicon for, deposition of polycryst., on borosilicate glass substrate, methods for)
IT Glass, oxide

L18 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:2013 HCAPLUS
DN 134:200977
TI **Micro-mechanical** deformation analysis of surface laminar circuit in organic flip-chip package: An experimental study
AU Han, B.; Kunthong, P.
CS Department of Mechanical Engineering, University of Maryland, College Park, MD, 20742, USA
SO J. Electron. Packag. (2000), 122(4), 294-300
CODEN: JEPAE4; ISSN: 1043-7398
PB American Society of Mechanical Engineers
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 38, 56
AB Thermo-mech. deformations of microstructures in a surface laminar circuit (SLC) substrate are quantified by microscopic moire interferometry. Two specimens are analyzed; a bare SLC substrate and a flip chip package assembly. The specimens are subjected to a uniform thermal loading of .DELTA.T = -70.**degree.** and the microscopic displacement fields are documented at the identical region of interest. The nano-scale displacement sensitivity and the microscopic spatial resoln. obtained from the expts. provide a faithful account of the complex deformation of the surface laminar layer and the embedded microstructures. The displacement fields are analyzed to produce the deformed configuration of the surface laminar layer and the strain distributions in the microstructures. The high modulus of underfill produces a strong coupling between the chip and the surface laminar layer, which produces a DNP-dependent shear deformation of the layer. The effect of the underfill on the deformation of the microstructures was studied and its implications on the package reliability are discussed.
ST microdeformation laminar circuit flip chip
IT Fiber-reinforced composites
Fillers

L18 ANSWER 4 OF 6 HCAPLUS

AN 1994:259013 HCAPLUS

DN 120:259013

TI Thermal mismatch strain in anodically bonded silicon and glass

AU Sooriakumar, K.; Meitzler, A. H.; Haeberle, R. J.; Artz, B. E.; Cathey, L. W.; Taher, I. I.

CS Electron. Div., Ford Mot. Co., Dearborn, MI, 48121, USA

SO Proc. - Electrochem. Soc. (1993), 93-29(Semiconductor Wafer Bonding: Science, Technology, and Applications), 225-9
CODEN: PESODO; ISSN: 0161-6374

DT Journal

LA English

CC 76-14 (Electric Phenomena)

AB A no. of microsensors are based on anodically bonding silicon wafers to wafers of Corning 7740 glass. Most of these sensors are electromech. devices that are very susceptible to any strain caused by either fabrication or packaging. When an anodic bond is formed at an elevated temp. and the bonded structure allowed to return to room temp., the whole structure distorts [1]. The silicon contracts more than the **glass** and the structure **bends** accordingly. The strain that is introduced is attributable to two major causes: (a) mismatch in the temp. coeffs. of expansion and (b) displacement of ions that occurs during the bonding operation. Most of the strain is attributable to the mismatch in expansion coeffs., but the ion displacement contribution is present and becomes significant at bonding temps. above 450.**degree**.C.

ST silicon glass bonding **micromech** sensor

IT Strain
(at silicon/glass bonding, in **micromech**. sensors)

IT Glass, oxide
RL: USES (Uses)

L18 ANSWER 5 OF 6 HCAPLUS

AN 1992:512448 HCAPLUS

DN 117:112448

TI Correlations between molecular weight, morphology and **micromechanical** deformation processes of polyethylenes

AU Michler, G. H.

CS Dep. Phys., Tech. Univ. Merseburg, Merseburg, Germany

SO Colloid Polym. Sci. (1992), 270(7), 627-38
CODEN: CPMSB6; ISSN: 0303-402X

DT Journal

LA English

CC 36-5 (Physical Properties of Synthetic High Polymers)

AB The influence of mol. wt. on morphol. and **micromech.** deformation processes of polyethylene (I) was studied by conventional transmission and high-voltage electron microscopy. Fractions with very narrow mol.-wt. distributions and com. samples of high-d. I for mol. wts. 104-1.6 .times. 106 were studied. With increasing mol. wt. there was a change in the morphol. from sheaflike structures and banded spherulites to small bundles of parallel lamellae or randomly distributed lamellae. For mol. wts. >105, the thickness of the lamellae increased more slowly than the thickness of the interlamellar, amorphous layers. During uniaxial tension the apparently homogeneous transformation to a c-texture consisted on a microscopic scale of different deformation steps, including twisting of the lamellae and the breaking up of the lamellae into shorter pieces or microblocks. Often, small regions were visible with a locally larger elongation than in the surrounding regions (locally heterogeneous deformation). The deformation steps were changed by modifications of the mobility of the mols. in the **amorphous** phase, including **deformation** at different temps. (20-110.**degree.**) and annealing below the melting temp.

ST polyethylene mol wt morphol deformation

IT Spherulites

L18 ANSWER 6 OF 6 HCAPLUS
AN 1989:535318 HCAPLUS
DN 111:135318
TI Solvent-induced embrittlement in a crystallizable polyarylate
AU Berger, Larry L.
CS Cent. Res. Dev. Dep., E. I. DuPont de Nemours and Co., Inc., Wilmington, DE, 19898, USA
SO J. Polym. Sci., Part B: Polym. Phys. (1989), 27(8), 1629-47
CODEN: JPBPEM; ISSN: 0887-6266
DT Journal
LA English
CC 37-5 (Plastics Manufacture and Processing)
AB The effects of solvent-induced crystn. on the **micromech.** properties of thin films of bisphenol A-isophthalic acid copolymer (I) were studied. Under uniaxial extension **amorphous** I **deformed** exclusively by shear **deformation** with no evidence of crazing. Upon exposure to MEK, vapor, or liq., I crystallizes and is subsequently embrittled. TEM results clearly show that this embrittlement results from a transition in plastic deformation mechanism from shear yielding to crazing. A detailed examn. of the samples revealed that the crazes formed preferentially within the noncryst. regions and that the craze tips followed a complex trajectory around the crystallites. In some cases the craze tip advance deviated by as much as .+-.30. **degree.** from a direction normal to the tensile axis. Because crazes are inherently more susceptible to forming cracks than shear deformation zones, crystn. reduces the fracture toughness of the polymer. This type of embrittlement, via a transition in plastic deformation mechanism, is believed to be a general behavior for solvent-crystallizable thermoplastics.
ST polyarylate solvent induced embrittlement crazing; bisphenol A copolymer

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L13  ANSWER 4 OF 16  HCAPLUS  COPYRIGHT 2001 ACS
AN   1999:49064  HCAPLUS
DN   130:113953
TI   Heat-resistant heat ray-shielding glasses and their manufacture
IN   Kinoshita, Kenichi; Takahira, Masaru
PA   Narumi China Corp., Japan
SO   Jpn. Kokai Tokkyo Koho, 9 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  C03C017-245
     ICS  C03C004-08; C03C010-14
CC   57-1 (Ceramics)
FAN.CNT 1
     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
PI   JP 11011982        A2   19990119       JP 1997-185883   19970625
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AB The title glasses are manufd. from **glass** substrates with low thermal expansion and **softening point** .gtoreq.650. **degree.** by heating at .gtoreq.650.**degree.** and forming tin oxide-base **thin films** by spraying or CVD method simultaneously. The heat-resistant glasses are also claimed and have good heat ray-shielding property under high temp.

ST tin oxide coating spraying CVD glass; glass heat resistance tin oxide coating; heat ray shielding glass manuf

IT Impact-resistant materials
(heat-resistant coatings; manuf. of heat ray-shielding glasses with tin oxide-base coatings by spraying or CVD method)

IT Heat-resistant coatings
(impact-resistant; manuf. of heat ray-shielding glasses with tin oxide-base coatings by spraying or CVD method)

IT Chemical vapor deposition
Heat shields
Spraying
(manuf. of heat ray-shielding glasses with tin oxide-base coatings by spraying or CVD method)

L13 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:661787 HCAPLUS
DN 129:283525
TI Photosensitive conductive paste and production of electrode
IN Okino, Akiko; Masaki, Takaki; Masata, Junji
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C03C008-18
ICS C03C003-066; C04B041-88; C23C024-08; G03F007-004; H01J009-02
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 57, 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10273338	A2	19981013	JP 1997-78197	19970328

AB The title conductive paste contains (1) a conductive powder, (2) a glass frit having a glass transition point of 400-500.**degree.**, a **glass softening point** of 450-550. **degree.**, an av. particle size of 0.5-1.4 .mu.m, a 90% particle size of 1-3 .mu.m, a top size of .ltoreq.4.5 .mu.m, and a thermal expansion coeff. at 50-400.**degree.** (.alpha.50-400) of 75-90 .times. 10-7/.**degree.**K, and (3) a photosensitive org. component. The paste is coated on a substrate and is subjected to photolithog. process to form patterns followed by baking to give electrodes. The paste provides high resoln. patterns and **thin film** electrodes with good adhesion to ceramic and glass substrates and low resistance, and is useful for plasma display panels.
ST photosensitive conductive paste glass frit; plasma display panel photoconductive paste electrode
IT Frits
Plasma display panels
(photoconductive paste contg. conductive powder, glass flit, and photosensitive org. component)
IT Aluminoborosilicate glasses

L13 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2001 ACS
AN 1991:148910 HCAPLUS
DN 114:148910
TI Low-temperature sinterable ceramic compositions, high-density glass-ceramics, and manufacture of ceramic substrates and multilayer glass-ceramic structures
IN Wingefeld, Gerd; Aldinger, Fritz
PA Hoechst A.-G., Fed. Rep. Ger.
SO Ger. Offen., 7 pp.
CODEN: GWXXBX
DT Patent
LA German
IC ICM C03C014-00
ICS C03C010-00; C03C010-08
ICA H01L023-06; H01L023-14
CC 57-2 (Ceramics)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3923491	A1	19910124	DE 1989-3923491	19890715
	JP 03054163	A2	19910308	JP 1990-187820	19900716
PRAI	DE 1989-3923491		19890715		

AB The ceramic compns. consist of 40-90 wt.% finely divided refractory material having coeff. of thermal expansion (.alpha.) 5 .times. 10-6/K (0-400.**degree**.) and 10-60 wt.% finely divided **glass** having **softening point** 650-850.**degree**., .alpha. corresponding to that of the refractory material, and dielec. const. (.epsilon.) <5 (at 106 Hz and 20.**degree**.). The high-d. glass-ceramics having .epsilon. 4-6.5 consist of finely divided polycryst. refractory material consisting of MgO 14.7-16.1, Al2O3 36.8-40.8, and SiO2 43.8-47.8 wt.%, having .alpha. .ltoreq.5 .times. 10-6/K, which is dispersed in a borosilicate or Li borosilicate **glass** matrix having .epsilon., .alpha. and **softening point** as above. The substrates are manufd. by mixing the above ingredients with org. auxiliary materials, forming **thin films** of the mixts., slowly heating the green films to remove the org. material, and sintering the films at 900-1000.**degree**.. The multilayer structures are manufd. by applying a metalizing paste contg. metal powder, binder, and solvent, to .gtoreq.2 green films, stacking the films and treating the films as above. Thus, a mixt. of cordierite and borosilicate glass in wt. ratio 80:20 was comminuted in EtOH, and the powder was sintered at 1098.**degree**. (shrinkage 12.3%) to obtain a glass-ceramic material having d. 2.17 g/cm3, .epsilon. 4.4, and .alpha. 1.7 .times. 10-6/K.
ST cordierite lithium borosilicate glass ceramic; multilayer glass ceramic

L13 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2001 ACS
AN 1994:634649 HCAPLUS
DN 121:234649
TI Growth of polycrystalline silicon **thin films** on glass
AU Shi, Zhengrong
CS Cent. Photovoltaic Devices Systems, Univ. New South Wales, Sydney, 2052, Australia
SO J. Mater. Sci.: Mater. Electron. (1994), 5(5), 305-9
CODEN: JSMEEV; ISSN: 0957-4522
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 75
AB Borosilicate glass was chosen as a substrate for soln. growth of Si due to its potential role as the superstrate of a solar module. The deposition of polycryst. Si on glass from solns. contg. Al or Mg is reported. Island growth was usually obtained when the deposition temp. was <750. **degree.**. Large-grain, continuous, Si **thin films** with an area of 10 cm2 were grown on **glass** substrates at temps. around the **softening points** of the **glass**. The growth of Si on glass can be explained on the basis that the presence of Al and Mg in the soln. reduces SiO_2 and exposes Si on the glass surface. The Si-rich surface improves the wetting of the glass by the soln. and acts as seeding sites for Si nucleation. The periodic-regrowth technique was used to improve the quality of the polycryst. Si **thin films** deposited on the glass substrates. Periodic repetition of the melt-back and regrowth procedures removed the small-grained crystals, suppressed the rapid growth of crystals perpendicular to the substrate, and enhanced the growth of slower-growing crystals in the lateral direction. This process markedly improved the smoothness, the grain size, the crystal quality, and the (111) preferred orientation of the Si **thin films**. Diode characteristics were obtained for p-n junction devices made on these polycryst. Si **thin films** deposited on glass substrates.
ST growth polycryst silicon borosilicate glass; solar cell module silicon growth

L18 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:183223 HCAPLUS
DN 134:288032
TI Phase transformations in sol-gel PZT thin films
AU Eakin, D. P.; Norton, M. G.; Bahr, D. F.
CS Mechanical and Materials Engineering, Washington State University, Pullman, WA, 99164-2920, USA
SO Mater. Res. Soc. Symp. Proc. (2000), 623(Materials Science of Novel Oxide-Based Electronics), 185-190
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
AB Thin films of PZT were deposited onto platinized and bare single crystal NaCl using spin coating and sol-gel precursors. These films were then analyzed using in situ heating in a transmission electron microscope. The results of in situ heating are compared with those of an ex situ heat treatment in a std. furnace, mimicking the heat treatment given to entire wafers of these materials for use in **MEMS** and ferroelec. applications. Films **transform** from **amorphous** to nanocryst. over days when held at room temp. While chem. variations are found between films crystd. in ambient conditions and films crystd. in the vacuum conditions of the microscope, the resulting crystal structures appear to be insensitive to these differences. Significant changes in crystal structure are found at 500.**degree.**, primarily the change from largely amorphous to the beginnings of clearly cryst. films. Crystn. does occur over weeks at room temp. in these films. Structural changes are more modest in these films when heated in the TEM then those obsd. on actual wafers. The presence of Pt significantly influences both the resulting structure and morphol. in both in situ and ex situ heated films. Without Pt present, the films appear to form small, 10 nm grains consisting of both cubic and tetragonal phases, whereas in the case of the Pt larger, 100 nm grains of a tetragonal phase are formed.
ST phase transition sol gel deposition lead titanate zirconate film
IT Crystallization
(of sol-gel lead titanate zirconate thin films grown on platinized and bare single crystal NaCl using spin coating and sol-gel precursors with time and heating)
IT Sol-gel processing
(phase transformations in sol-gel lead titanate zirconate thin films grown on platinized and bare single crystal NaCl using spin coating and sol-gel precursors)
IT Coating process
(spin; phase transformations in sol-gel lead titanate zirconate thin

L18 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2001 ACS
AN 2001:384570 HCAPLUS
TI Fabrication of multi-layered SiCN ceramic **MEMS** using photo-polymerization of precursor
AU Liew, Li-Anne; Luo, Ruiling; Liu, Yiping; Zhang, Wenge; An, Linan; Bright, Victor M.; Dunn, Martin L.; Daily, John W.; Raj, Rishi
CS NSF Center for Advanced Manufacturing and Packaging of Microwave, Optical, Department of Mechanical Engineering, University of Colorado, Boulder, CO, 80309-0427, USA
SO IEEE Int. Conf. Micro Electro Mech. Syst., Tech. Dig., 14th (2001), 86-89
Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.
CODEN: 69BHXI
DT Conference
LA English
CC 76 (Electric Phenomena)
AB This paper describes the use of photo-polymn. of precursor as a versatile and cost-effective means of fabricating SiCN ceramic **MEMS**. SiCN is a new class of polymer-derived ceramics whose starting material is a liq.-phase polymer. By adding a photo-initiator to the precursor, photolithog. patterning of the precursor can be accomplished by UV exposure. The resulting solid polymer structures are then crosslinked under isostatic pressure, and pyrolyzed. Thermal decompn. **transforms** the polymer to an **amorphous** ceramic capable of withstanding over 1500 **.degree.**C. By adding and curing successive layers of liq. polymer precursor on top of one another, multilayered ceramic structures can be easily fabricated. The use of photo-polymn. can also be used to make thin, membrane-like ceramic structures. By combining photo-polymn. with other inhouse developed techniques such as polymer-based bonding and flip-chip bonding, three SiCN **MEMS** devices for high temp. applications have been fabricated: an electrostatic actuator, a pressure transducer, and a combustion chamber. These represent a wide range of **MEMS**, demonstrating the versatility of this technique.
RE.CNT 6
RE

L40 ANSWER 17 OF 48 WPIX
AN 1972-71091T [44] WPIX
TI Resistance compsn - contg glass frit and palladium.
DC L03 V01
PA (SHOE) SHOEI CHEMICAL IND CO LTD
CYC 1
PI JP 47042917 B (197244)*
PRAI JP 1968-17653 19680319
IC H01C000-00
AB JP 72042917 B UPAB: 19930831
Compsn comprises >=1 precious metal and glass frit contg. 0.5 to 25 wt.% of Pd. The **glass** frit has **softening pt** of 300 to 700 **degrees** C. Raw materials of the frit are selected from silicic acid, alumina, boric acid, lead, oxide, phosphoric acid, etc.
The precious metals are selected from Ag, Pd, Au, **Pt**, Rh, Ru, Ir and Os. Compsn. is coated on an insulating **substrate** to obtain a **thin film** resistor.
FS CPI EPI
FA AB
MC CPI: L03-B01C

L49 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2001 ACS
AN 1998:661787 HCAPLUS
DN 129:283525
TI Photosensitive conductive paste and production of electrode
IN Okino, Akiko; Masaki, Takaki; Masata, Junji
PA Toray Industries, Inc., Japan
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C03C008-18
ICS C03C003-066; C04B041-88; C23C024-08; G03F007-004; H01J009-02
CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 57, 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10273338	A2	19981013	JP 1997-78197	19970328

AB The title conductive paste contains (1) a conductive powder, (2) a glass frit having a glass transition point of 400-500.degree., a **glass softening point** of 450-550.degree., an av. particle size of 0.5-1.4 .mu.m, a 90% particle size of 1-3 .mu.m, a top size of .ltoreq.4.5 .mu.m, and a thermal expansion coeff. at 50-400.degree. (.alpha.50-400) of 75-90 .times. 10-7/.degree.K, and (3) a photosensitive org. component. The paste is coated on a substrate and is subjected to photolithog. process to form patterns followed by baking to give electrodes. The paste provides high resoln. patterns and **thin film** electrodes with good adhesion to ceramic and glass substrates and low resistance, and is useful for plasma display panels.
ST photosensitive conductive paste glass frit; plasma display panel photoconductive paste electrode
IT Frits
Plasma display panels
(photoconductive paste contg. conductive powder, glass flit, and photosensitive org. component)
IT Aluminoborosilicate glasses
Borosilicate glasses
RL: DEV (Device component use); USES (Uses)
(photoconductive paste contg. conductive powder, glass flit, and photosensitive org. component)
IT 1303-86-2, Boron oxide, uses 1304-28-5, Barium oxide, uses 1304-76-3, Bismuth oxide, uses 1313-59-3, Sodium oxide, uses 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconium oxide, uses 1344-28-1, Aluminum

L53 ANSWER 6 OF 7 HCAPLUS

AN 1947:19986 HCAPLUS
DN 41:19986
OREF 41:3997f-i
TI Optical plastics materials
AU Starkie, D.
SO British Plastics (1947), 19, 96-103
DT Journal
LA Unavailable
CC 31 (Synthetic Resins and Plastics)

AB The commonly used optical plastics materials are Transpex 1 (polymethyl methacrylate) (I) and Transpex 2 (polystyrene) (II). Optical properties of I and II, resp., are nD20 1.4900 and 1.5900, relative dispersion (nD-1)/(nF-nC), 57.5 and 31.0, reduction in intensity of visible light on passing through a 0.125-in. sheet, 8 and 10%, and effect of exposure to sunlight, no effect and slight yellowing after long exposure. **Phys. properties** of I and II are listed. Plastic materials and glass for optical uses are compared. Plastic materials have the advantage of low d., greater resistance to mech. and thermal shock, transmission in the ultraviolet region down to 2900 A., ease of handling with ordinary workshop equipment, and higher resistance to mold growth. They have the disadvantages of lower scratch resistance, low **softening point** (120.degree.) and distortion temp., lower thermal cond., and higher coeff. of expansion. The 2 established methods of manuf. of plastics optical components are (1) the compression molding method and (2) the surface-finishing method. Method (1) has been described in British Plastics 18, 219(1946) and Plastics, May 4, 1946, p. 27. Method (2) consists of casting a very **thin film** of polymer on a preformed part and molding in a glass mold. A glass mold permits light polymerization of the surface film. Optical mirrors can be made by deposition of a reflecting layer of Al in a vacuum chamber. Once molds are made optical parts with aspherical surfaces can be produced in quantity. Applications of plastic optical parts are discussed. Large lenses for the projection of the image in television receivers can be produced from I.

L53 ANSWER 1 OF 7 INSPEC COPYRIGHT 2001 IEE
AN 1972:391543 INSPEC DN A72040224
TI Amorphous semiconductors. (**Physical properties**).
AU Hamakawa, Y.
SO Oyo Buturi (May 1971) vol.40, no.5, p.552-9. 25 refs.
CODEN: OYBSA9 ISSN: 0369-8009
DT Journal
TC General Review
CY Japan
LA Japanese
AB The author discusses the **physical properties** of some new amorphous semiconductor materials consisting of chalcogen (S, Se and Te) glasses. These show the following advantages as compared with oxide glass. Their **softening point** is low, leakage to metals is good, their water and acid resistance is high but that to alkalis weak, the thermal expansion coefficient is high but because of their low **softening point**, they readily form **thin films** by vacuum sublimation and the incidence of cracking and peeling is low, and permeability to infra-red radiation is good. The electrical properties and the mobility gap, and the switch and memory properties are examined in some detail. The article concluded with a brief survey of the development of elements for practical use for electrons and for optical glasses.
CC A6140D Glasses; A6570 Thermal expansion and thermomechanical effects; A7000 Condensed matter: electronic structure, electrical, magnetic, and optical properties; A7220 Conductivity phenomena in semiconductors and insulators; A7820D Optical constants and parameters
CT AMORPHOUS STATE; ELECTRICAL CONDUCTIVITY OF SOLIDS; GLASS; LIGHT ABSORPTION; SEMICONDUCTORS; THERMAL EXPANSION

L40 ANSWER 2 OF 48 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1998-472913 [41] WPIX
DNN N1998-369216 DNC C1998-142894
TI Prepn. of **thin film** electroluminescence device - by multi-layering a transparent electrode, the first insulating layer, a luminescence layer consisting of calcium thiogallate, second insulating layer, and the second electrode, on a glass **substrate**.
DC L03 X26
PA (FJIE) FUJI ELECTRIC CO LTD
CYC 1
PI JP 10199675 A 19980731 (199841)* 5p H05B033-10
ADT JP 10199675 A JP 1997-2587 19970110
PRAI JP 1997-2587 19970110
IC ICM H05B033-10
ICS C09K011-00; C09K011-02; C09K011-62; H05B033-14; H05B033-20
AB JP 10199675 A UPAB: 19981014
Prepn. method of the **thin film** EL device is new. In prepn. of the **thin film** EL device formed by multi-layering a transparent electrode, the first insulating layer, a luminescence layer consisting of calcium thiogallate, the second insulating layer, and the second electrode, on a glass **substrate**, in order; the calcium thiogallate layer is deposited by sputtering, then heat- treatment is done through **temp.** elevation rate of 0.25-50 **deg.** C/sec, up to 800- 900 **deg.** C, and keeping the layer at the **temp.** for 1-15 min.

USE - The method is used for prepn. of the **thin film** EL device to be used for thin display equipments.

ADVANTAGE - $CaGa_2S_4$ in amorphous state can be converted into luminous single phase calcium thiogallate, without **deformation** of the **glass substrate**. **Temp.** of the heat-treatment can be lowered up to 650 **deg.** C, lower than the **softening pt.** of the **glass substrate**.

Dwg.0/4

L40 ANSWER 27 OF 48 JAPIO COPYRIGHT 2001 JPO
AN 1994-104280 JAPIO
TI **THIN FILM** TRANSISTOR AND MANUFACTURE THEREOF
IN YOSHINOUCHI ATSUSHI; MORITA TATSUO; TSUCHIMOTO SHUHEI
PA SHARP CORP, JP (CO 000504)
PI JP 06104280 A 19940415 Heisei
AI JP1992-307350 (JP04307350 Heisei) 19921117
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: E, Sect. No. 1577, Vol. 18, No. 372, P. 113 (19940713)
IC ICM (5) H01L021-336
ICS (5) H01L029-784; (5) H01L021-265

AB PURPOSE: To allow easy manufacture of a **thin film** transistor on a **glass substrate** having a low **softening point** by performing ion implantation of the impurities on a polycrystalline silicon **thin film** so as to set up a **substrate temperature** of a manufacturing process after ion implantation not exceeding a fixed value.
CONSTITUTION: A polycrystalline silicon **thin film** 14 for forming a channel and the source-drain region of a **thin film** transistor is formed on the surface of an insulating **substrate** 13 consisting of a glass **substrate**. Thereon a gate insulating film 17, further thereon a polycrystalline silicon **thin film** 18 for forming a transistor gate is formed. Ions consisting of the impurity element ions and hydrogen ions are applied to the **thin film** transistor before ion implantation for performing ion implantation so that a source part 15 and a drain part 16 are formed by self-alignment and doping of the impurity elements while making a gate part 1i of low resistance. A insulating film 19 is formed by film formation of SiO2 by an APC method at a **substrate temperature** not exceeding 450.**degree**.C.

L40 ANSWER 13 OF 48 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1984-173188 [28] WPIX
DNN N1984-129042 DNC C1984-073152
TI Photo magnetic disc with easy perpendicular magnetisation - produced by forming magnetic **thin film** over tracking groove side of low m.**pt.** glass **substrate.**
DC A85 L03
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 1
PI JP 59094256 A 19840530 (198428)* 3p
JP 05057661 B 19930824 (199336) G11B011-10
ADT JP 59094256 A JP 1982-204073 19821119; JP 05057661 B JP 1982-204073 19821119
FDT JP 05057661 B Based on JP 59094256
PRAI JP 1982-204073 19821119
IC G11B005-62; G11B011-10; G11C013-06
AB JP 59094256 A UPAB: 19930925

Molten low m.**pt.** glass is cast over the surface of polyimide resin stamper having previously formed grooves opposing the tracking grooves. This is cooled, the **substrate** with tracking grooves is sepd. from the stamper, and a magnetic **thin film** is formed over the surface of the tracking groove side of the **substrate.**

Low m.**pt. glass** of **softening pt** . 377 **deg.**C is placed in a crucible and heated to 480 **deg.**C in a heating furnace to melt the glass. The melted glass is cast through a pipe equipped with heater over the surface of a stamper set in a disc-forming furnace maintained at 450 **deg.**C. After the surface of the cast glass flattened, it is gradually cooled and then sepd. from the stamper. Then over the surface of tracking grooves of the glass a **thin film** of a given metal or alloy is formed by vacuum deposition or sputtering.

ADVANTAGE - The disc does not release gas, unlike photopolymer **substrates.**

0/4

L40 ANSWER 10 OF 48 WPIX COPYRIGHT 2001 DERWENT INFORMATION LTD
AN 1989-236349 [33] WPIX
DNN N1989-179932 DNC C1989-105228
TI Magnetic disk having improved durability - comprises ferromagnetic metallic **thin film** on non-magnetic layer and interposed glass layer.
DC L03 T03
PA (HITM) HITACHI MAXELL KK
CYC 1
PI JP 01169719 A 19890705 (198933)* 5p
ADT JP 01169719 A JP 1987-327981 19871224
PRAI JP 1987-327981 19871224
IC G11B005-70
AB JP 01169719 A UPAB: 19930923
Magnetic disk comprises a magnetic recording layer of ferromagnetic metallic **thin film** formed on a non-magnetic layer, and a glass layer of less than 600 **deg.**C of softening **point** as an undercoat layer formed between the non-magnetic **substrate** and the magnetic recording layer.

Opt. the magnetic layer is heated at a **temp.** more than the crystal transformation **point** of the ferromagnetic metal, cooled and again heated and cooled while impressing the magnetic field. The heat treatments are carried out at a **temp.** between the **softening point** of the **glass** and the crystal **transformation point** of the ferromagnetic metal.

ADVANTAGE - Magnetic disk has improved magnetic property and durability.

In an example, a crystal glass **substrate** (3.5 inches dia.) is coated with 500 Angstroms thick PbO **glass** (**softening point** = 350 **deg.**C) as an undercoat by sputtering, and 500 Angstroms thick magnetic recording layer (20Ni-80Co) is coated on it by sputtering to form a magnetic disk. The magneti disk is heated at 800 **deg.**C in 5x10 power (-7) Torr vacuum for 1 hour and cooled to room **temp.**, heated at 600 **deg.**C in 1x10 power (-2) Torr vacuum while impressing 3000 Oe magnetic flux in a circular direction of the disk and cooled at a rate of 30 **deg.**C/min. The durability of the disk is 2.0 kpass.
0/0
FS CPI EPI
FA AB

L40 ANSWER 8 OF 48 WPIX
AN 1992-170525 [21] WPIX
DNN N1992-128489 DNC C1992-078295
TI Forming glass **substrate** for curved liquid crystal cell - by forming indium tin oxide films on glass **substrates**, contacting 2 **substrates** so films face inside, and moulding.
DC L01 L03 P81 U14
PA (TOYT) TOYOTA JIDOSHA KK
CYC 1
PI JP 04104222 A 19920406 (199221)* 5p
ADT JP 04104222 A JP 1990-223398 19900824
PRAI JP 1990-223398 19900824
IC G02F001-13
AB JP 04104222 A UPAB: 19931006
Glass **substrate** for curved liq. crystal (LC) is obtd. by forming ITO **thin film** on a glass **substrate;**
contacting two of these glass **substrates** with ITO inside; and moulding due to their own weight. Film thickness of ITO is 200-1000 Angstroms, and the moulding is at 580-650 **deg.** C for 15-210 minutes.

In an example, a glass **substrate** for curved LC was prepd. by forming 1000 A thick SiO2 and 200 A thick ITO films on a soda lime **glass (softening pt.** 530 **deg.** C,
300x180x0.7mm) by sputtering. Two of these glass **substrates** were ultrasonic wave cleaned and contacted with each other so the ITO films face each other while aspirating air at the inside until an interference fringe was observed, then set on a die with concaved curve (radius curvature of 180 mm), heated for 60 minutes at 600 **deg.** C, cooled to 500 **deg.** C at rate of 100 **deg.** C/hours and cooled at room **temp.** (1-3/4)
1-3/4
FS CPI EPI GMPI
FA AB; GI

L40 ANSWER 41 OF 48 JAPIO COPYRIGHT 2001 JPO
AN 1986-236009 JAPIO
TI COMPOSITE **SUBSTRATE** FOR **THIN FILM** MAGNETIC HEAD
IN WADA TOSHIAKI; NAKAOKA JUNICHI
PA SUMITOMO SPECIAL METALS CO LTD, JP (CO 330335)
PI JP 61236009 A 19861021 Showa
AI JP1985-77127 (JP60077127 Showa) 19850411
SO PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: P, Sect. No. 555, Vol. 11, No. 79, P. 74 (19870311)
IC ICM (4) G11B005-31
ICS (4) H01F010-26
AB PURPOSE: To produce easily a laminated **thin film** magnetic head by interposing a **glass** layer whose **softening point** and thermal expansion coefficient are specified between soft ferrite layers having specified surface roughness to obtain the title 3-layered **substrate.**
CONSTITUTION: A glass layer having 400-850.**degree.**C softening **point** and a thermal expansion coefficient which is different from the thermal expansion coefficient of a soft ferrite layer by .ltoreq.1.times.10-6/**degree** is interposed between the soft ferrite layers having the outer principal plane having .ltoreq.200.ANG. surface roughness to constitute 3 layers of soft ferrite, glass and soft ferrite. Since the composite **substrate** has the glass layer between the soft ferrite layers, the **substrate** is magnetically separated and a magnetic circuit can be formed respectively on the soft ferrite layer surfaces of both principal planes of the **substrate** . Consequently, an erasing head 30 is formed one of the soft ferrite layer 1 surfaces of the composite **substrate** 10 and a bulk-type **thin film** magnetic head for a floppy disk, etc., wherein a recording and reproducing head 31 is formed can be easily made on the other soft ferrite layer 2 surface.